

CLAIMS

1. DNA comprising the sequence shown in Seq ID No. 2.
- 5 2. DNA comprising the sequence shown in Seq ID No. 3.
3. DNA comprising the sequence shown in Seq ID No. 4.
4. DNA comprising a sequence which shows 60% or more homology with the sequence
10 shown in Seq ID No 1, 2 or 3.
5. DNA according to claim 4 wherein said homology is in the range of 65% to 99%.
6. DNA which hybridises to the sequence shown in Seq. ID No. 2, 3 or 4, and which
15 codes for at least part of the *Heliothis* ecdysone receptor.
7. DNA which is degenerate as a result of the genetic code to the DNA of any one of
claims 1 to 6 and which codes for a polypeptide which is at least part of the *Heliothis*
ecdysone receptor.
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8. DNA comprising part of the sequence shown in Seq ID No. 2, and which codes for at
least part of the *Heliothis* ecdysone receptor ligand binding domain.
9. DNA comprising part of the sequence shown in Seq ID No. 3, and which codes for at
25 least part of the *Heliothis* ecdysone receptor ligand binding domain.
10. DNA comprising part of the sequence shown in Seq ID No. 4, and which codes for at
least part of the *Heliothis* ecdysone receptor ligand binding domain.
- 30 11. DNA comprising a sequence which shows 60% or more homology with the sequence
of claim 8, 9 or 10.
12. DNA according to claim 11 wherein said homology is in the range of 65% to 99%.
- 35 13. DNA which hybridises to the DNA of any one of claims 8 to 12 and which codes for
at least part of the *Heliothis* ecdysone receptor ligand binding domain.

14. DNA which is degenerate as a result of the genetic code to the DNA of any one of claims 8 to 12 and which codes for a polypeptide which is at least part of the *Heliothis* ecdysone receptor ligand binding domain.
- 5 15. DNA comprising part of the sequence shown in Seq ID No. 2, and which codes for at least part of the *Heliothis* ecdysone receptor DNA binding domain.
16. DNA comprising part of the sequence shown in Seq ID No. 3, and which codes for at least part of the *Heliothis* ecdysone receptor DNA binding domain.
- 10 17. DNA comprising part of the sequence shown in Seq ID No. 4, and which codes for at least part of the *Heliothis* ecdysone receptor DNA binding domain.
- 15 18. DNA comprising a sequence which shows 60% or more homology with the sequence of claim 15, 16 or 17.
19. DNA according to claim 18 wherein said homology is in the range of 65% to 99%.
- 20 20. DNA which hybridises to the DNA of any one of claims 15 to 19 and which codes for at least part of the *Heliothis* ecdysone receptor DNA binding domain.
- 25 21. DNA which is degenerate as a result of the genetic code to the DNA of any one of claims 15 to 19 and which codes for a polypeptide which is at least part of the *Heliothis* ecdysone receptor DNA binding domain.
22. DNA comprising part of the sequence shown in Seq ID No. 2, and which codes for at least part of the *Heliothis* ecdysone receptor transactivation domain.
- 30 23. DNA comprising part of the sequence shown in Seq ID No. 3, and which codes for at least part of the *Heliothis* ecdysone receptor transactivation domain.
24. DNA comprising part of the sequence shown in Seq ID No. 4, and which codes for at least part of the *Heliothis* ecdysone receptor transactivation domain.
- 35 25. DNA comprising a sequence which shows 60% or more homology with the sequence of claim 22, 23 or 24.

26. DNA according to claim 25 wherein said homology is in the range of 65% to 99%.
27. DNA which hybridises to the DNA of any one of claims 22 to 26 and which codes for at least part of the *Heliothis* ecdysone receptor transactivation domain.
- 5 28. DNA which is degenerate as a result of the genetic code to the DNA of any one of claims 22 to 26 and which codes for a polypeptide which is at least part of the *Heliothis* ecdysone receptor transactivation domain.
- 10 29. DNA comprising part of the sequence shown in Seq ID No. 2, and which codes for at least part of the *Heliothis* ecdysone receptor hinge domain.
30. DNA comprising part of the sequence shown in Seq ID No. 3, and which codes for at least part of the *Heliothis* ecdysone receptor hinge domain.
- 15 31. DNA comprising part of the sequence shown in Seq ID No. 4, and which codes for at least part of the *Heliothis* ecdysone receptor hinge domain.
32. DNA comprising a sequence which shows 60% or more homology with the sequence of claim 29, 30 or 31.
- 20 33. DNA according to claim 32 wherein said homology is in the range of 65% to 99%.
34. DNA which hybridises to the DNA of any one of claims 29 to 33 and which codes for at least part of the *Heliothis* ecdysone receptor hinge domain.
- 25 35. DNA which is degenerate as a result of the genetic code of the DNA of any one of claims 29 to 33 and which codes for a polypeptide which is at least part of the *Heliothis* ecdysone receptor hinge domain.
- 30 36. DNA having part of the sequence shown in Seq ID No. 2, and which codes for at least part of the *Heliothis* ecdysone receptor carboxy terminal region.
- 35 37. DNA having part of the sequence shown in Seq ID No. 3, and which codes for at least part of the *Heliothis* ecdysone receptor carboxy terminal region.

38. DNA having part of the sequence shown in Seq ID No. 4, and which codes for at least part of the *Heliothis* ecdysone receptor carboxy terminal region.
39. DNA comprising a sequence which shows 60% or more homology with the sequence of claim 36, 37 or 38.
40. DNA according to claim 39 wherein said homology is in the range of 65% to 99%.
41. DNA which hybridises to the DNA of any one of claims 36 to 40 and which codes for at least part of the *Heliothis* ecdysone receptor carboxy terminal region.
42. DNA which is degenerate as a result of the genetic code of the DNA of any one of claims 36 to 40 and which codes for a polypeptide which is at least part of the *Heliothis* ecdysone receptor carboxy terminal region.
43. A polypeptide comprising the *Heliothis* ecdysone receptor or a fragment thereof, wherein said polypeptide is substantially free from other proteins with which it is ordinarily associated, and which is coded for by the DNA of any preceding claim.
44. A polypeptide comprising the amino acid sequence shown in Seq ID No. 4 or any allelic variant or derivative thereof.
45. A polypeptide comprising part of the amino acid sequence shown in Seq ID No. 4 or any allelic variant or derivative thereof, which sequence provides the *Heliothis* ecdysone receptor ligand binding domain.
46. A polypeptide comprising part of the amino acid sequence shown in Seq ID No. 4 or any allelic variant or derivative thereof, which sequence provides the *Heliothis* ecdysone receptor DNA binding domain.
47. A polypeptide comprising part of the amino acid sequence shown in Seq ID No. 4 or any allelic variant or derivative thereof, which sequence provides the *Heliothis* ecdysone receptor transactivation domain.
48. A polypeptide comprising part of the amino acid sequence shown in Seq ID No. 4 or any allelic variant or derivative thereof, which sequence provides the *Heliothis* ecdysone receptor hinge domain.

49. A polypeptide comprising part of the amino acid sequence shown in Seq ID No. 4 or any allelic variant or derivative thereof, which sequence provides the *Heliothis* ecdysone receptor carboxy terminal region.
50. A polypeptide according to any one of claims 44 to 49 wherein said derivative is a homologous variant which includes conservative amino acid changes.
51. DNA comprising the sequence shown in Seq ID No. 6.
52. DNA comprising a sequence which shows 60% or more homology with the sequence shown in Seq ID No. 6.
53. DNA according to claim 52 wherein said homology is in the range of 65% to 99%.
54. DNA which hybridises to the DNA sequence shown in Seq ID No. 6 and which codes for at least part of *Spodoptera* ecdysone receptor.
55. DNA which is degenerate as a result of the genetic code to the DNA of any one of claims 51 to 54.
56. DNA comprising part of the sequence shown in Seq ID No. 6, and which codes for at least part of the *Spodoptera* ecdysone receptor ligand binding domain.
57. DNA comprising a sequence which shows 60% or more homology with the sequence of claim 56.
58. DNA according to claim 57 wherein said homology is in the range of 65% to 99%.
59. DNA which hybridises to the DNA of any one of claims 56 to 58 and which codes for at least part of the *Spodoptera* ecdysone receptor ligand binding domain.
60. DNA which is degenerate as a result of the genetic code to the DNA of any one of claims 56 to 58 and which codes for at least part of the *Spodoptera* ecdysone receptor ligand binding domain.

61. DNA comprising part of the sequence shown in Seq ID No. 6, and which codes for at least part of the *Spodoptera* ecdysone receptor hinge domain.
- 5 62. DNA comprising a sequence which shows 60% or more homology with the sequence of claim 61.
63. DNA according to claim 62 wherein said homology is in the range of 65% to 99%.
- 10 64. DNA which hybridises to the DNA of any one of claims 61 to 63 and which codes for at least part of the *Spodoptera* ecdysone receptor hinge domain.
65. DNA which is degenerate as a result of the genetic code to the DNA of any one of claims 61 to 63 and which codes for at least part of the *Spodoptera* ecdysone receptor hinge domain.
- 15 66. A polypeptide coded for by the DNA of any one of claims 51 to 65.
67. A fusion polypeptide comprising the polypeptide of claim 45 or 50 (when dependent upon claim 45) and functionally linked to a DNA binding domain and a transactivation domain.
- 20 68. Recombinant DNA comprising the DNA of any one of claim 8 to 14 functionally linked to DNA encoding a DNA binding domain and a transactivation domain.
- 25 69. A fusion polypeptide according to claim 67 or recombinant DNA according to claim 68 wherein the DNA binding domain and/or transactivation domain is fungal, bacterial, plant or mammalian.
70. A fusion polypeptide or recombinant DNA according to claim 69 wherein the DNA binding domain is GAL4 or A1CR/A.
- 30 71. A fusion polypeptide or recombinant DNA according to claim 69 or 70 wherein the transactivation domain is VP16.
- 35 72. A fusion polypeptide or recombinant DNA according to claim 69 wherein the DNA binding domain and/or transactivation domain is from a steroid receptor superfamily member.

73. A fusion polypeptide or recombinant DNA according to claim 72 wherein the DNA binding domain and/or transactivation domain is from a glucocorticoid or a *Spodoptera* ecdysone receptor.
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74. A recombinant DNA construct comprising recombinant DNA of any one of claims 68 to 73; and DNA which codes for a gene operably linked to a promoter sequence and a hormone response element, which is responsive to the DNA binding domain coded for by said recombinant DNA.
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75. A fusion polypeptide comprising the polypeptide of claim 46 or 50 (when dependent upon claim 46) and functionally linked to a ligand binding domain and a transactivation domain.
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76. Recombinant DNA comprising the DNA of any of claims 15 to 21 functionally linked to DNA encoding a ligand binding domain and a transactivation domain.
77. A fusion polypeptide according to claim 75 or recombinant DNA according to claim 76 wherein the ligand binding domain and/or transactivation domain is fungal, bacterial, plant or mammalian.
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78. A fusion polypeptide or recombinant DNA according to claim 77 wherein the transactivation domain is VP16.
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79. A fusion polypeptide or recombinant DNA according to claim 77 wherein the ligand binding domain and/or transactivation domain is from a steroid receptor superfamily member.
80. A fusion polypeptide or recombinant DNA according to claim 79 wherein the ligand binding domain and/or transactivation domain is from a glucocorticoid or *Spodoptera* ecdysone receptor.
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81. A recombinant DNA construct comprising recombinant DNA of any one of claims 76 to 80; and DNA which codes for a gene operably linked to a promoter sequence and a hormone response element, which is responsive to the DNA binding domain coded for by said recombinant DNA.
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82. A fusion polypeptide comprising the polypeptide of claim 47 or 50 (when dependent upon claim 47) and functionally linked to a ligand binding domain and a DNA binding domain.
- 5 83. Recombinant DNA comprising the DNA of any one of claims 22 to 28 functionally linked to DNA encoding a ligand binding domain and a DNA binding domain.
84. A fusion polypeptide according to claim 82 or recombinant DNA according to claim 83 wherein the ligand binding domain and/or DNA binding domain is fungal, bacterial,
10 plant or mammalian.
85. A fusion polypeptide or recombinant DNA according to claim 84 wherein the DNA binding domain is GAL4 or A1CR/A.
- 15 86. A fusion polypeptide or recombinant DNA according to claim 84 wherein the ligand binding domain and/or DNA binding domain is from a steroid receptor superfamily member.
87. A fusion polypeptide or recombinant DNA according to claim 86 wherein the ligand
20 binding domain and/or DNA binding domain is from a glucocorticoid or *Spodoptera* ecdysone receptor.
88. A recombinant DNA construct comprising recombinant DNA of any one of claims 82 to 87; and DNA which codes for a gene operably linked to a promoter sequence and a
25 hormone response element, which is responsive to the DNA binding domain coded for by said recombinant DNA.
89. A recombinant DNA construct comprising DNA according to any one of claims 1 to 7; and DNA comprising a sequence which codes for a gene operably linked to a
30 promoter sequence and at least one hormone response element which is responsive to the DNA binding domain coded for by said DNA of any one of claim 1 to 7.
90. A recombinant DNA construct according to any one of claims 74, 81, 88 and 89 wherein said promoter sequence codes for a constitutive, spatially or temporally
35 regulating promoter.

91. A recombinant DNA construct according to any one of claims 74, 81, 88 and 89 wherein there is more than one copy of the hormone response element.
- 5 92. A cell transformed with the DNA of any one of claims 1 to 42, and 51 to 65; the polypeptide of any one of claims 43 to 50; the fusion polypeptide of any one of claims 67, 70 to 73, 75, 77 to 80, 82 and 84 to 87; the recombinant nucleic acid of any one of claims 68 to 73, 76 to 80 and 85 to 87; or the recombinant DNA construct of any one of claims 74, 81, 88 and 89.
- 10 93. A cell according to claim 92 wherein said cell is a plant, fungal or mammalian cell.
94. A plant, fungus or mammal comprising the recombinant DNA construct of any one of claims 74, 81, 88 and 89.
- 15 95. A method of selecting compounds capable of being bound to an insect steroid receptor superfamily member comprising screening compounds for binding to said polypeptide of any one of claims 43 to 50 or the fusion polypeptide of any one of claims 67, 70 to 73, 75, 77 to 80, 82 and 84 to 87, and selecting said compounds exhibiting said binding.
- 20 96. A compound selected using the method of claim 95.
97. An agricultural or pharmaceutical composition comprising the compound of claim 96.
- 25 98. Use of the compound of claim 96 as an agrochemical or a pharmaceutical.
99. A method of producing a protein, peptide or polypeptide comprising introducing into the cell of claim 92, a compound which binds to the ligand binding domain in said cell.